

14. Some Additions to the known Dragonfly Fauna of Borneo, with an Account of new Species of the Genus *Cœliccia*. By F. F. LAIDLAW, M.A., F.Z.S.

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(Text-figures 1-10.)

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ZYGOPTERA.

Family AGRIONIDÆ (=CÆNAGRIONINÆ Kirby).

Legion PLATYCNEMIS.

CÆLICCIA FLAVOSTRIATA, sp. n. (Text-figs. 1, 2.)

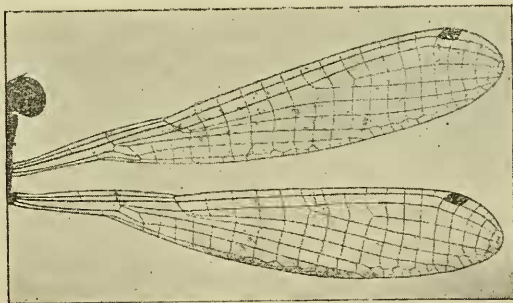
2♂♂. Mt. Merinjak, 21-28.v.14. (The second specimen is the type.)

1♂. Mt. Matang, 4.xii.13.

Length of abdomen 35 mm., of hind wing 21.5 mm.

$M_3$  rises at level of subnodus,  $R_s$  a little after\*. Three cells between quadrilateral and subnodus. Costal margin of quadrilateral three-fifths the length of anal margin in fore wing; three-fourths in hind wing.

Text-figure 1.



Wings of *Cœliccia flavostriata* Laidlaw. Type ♂.

*Pterostigma* dark brown, sides approximately parallel, covering rather more than one cell. 12-13 postnodals on fore wing. (Text-fig. 1.)

\* The veins are indicated by the Comstock-Needham notation.

*Head*: Lower lip yellowish white, otherwise the head is black *except* the anteclypeus and extreme base of upper lip, which are white, and a pair of transverse marks, cuneiform in shape, on either side of the hinder ocelli, these marks being yellowish white.

*Prothorax*: Anterior and posterior lobes black, middle lobe yellow, with a very fine median black line.

*Thorax* black above, yellow at the sides and underneath, a pair of orange-yellow antehumeral stripes, and at the top of either shoulder, just outside the stripes, a fine yellow spot. On the side of the thorax a black line on the second lateral suture, incomplete below.

*Abdomen*: Segment 1 yellow, with median line of black. Segments 2-5 brown, paler below, each with a black terminal ring. The remaining segments progressively darker, the last two bronze-black.

The youngest of the three males has a whitish, diamond-shaped spot on the dorsum of segment 10.

Text-figure 2.



*Caeliccia flavostriata*, ♂.

Anal appendages, seen from above.

*Anal appendages* black, upper pair longer than segment 10, lower pair one-third longer than upper pair. Upper pair moderately stout, incurved, flattened dorso-ventrally towards the free extremity; each carries an internal tooth at the end of its basal third. In the youngest specimen the flattened part of the appendage is yellow. The lower pair are slender, cylindrical and incurved. (Text-fig. 2.)

*Legs*: Femora yellow, with black stripes; tibiae brown, tarsi and spines black.

Type ♂ in the British Museum. Paratypes, one in my own collection, and one to be returned to the Sarawak Museum.

*CÆLICCIA CAMPIONI*, sp. n. (Text-figs. 3, 4.)

1 ♂. Lio Matu, 31. x. 14.

Length of abdomen 37 mm., of hind wing 21 mm.

Postnodals on fore wing 13.

Closely allied to the preceding species (*C. flavostriata*). It differs as follows:—

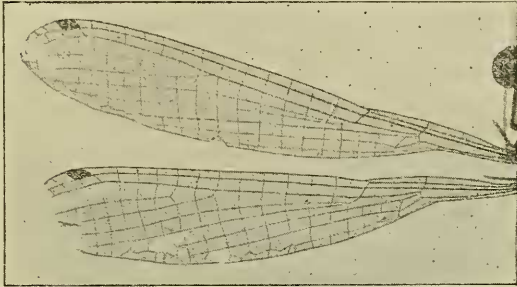
*Colour*: No cuneiform markings on vertex. Markings on

prothorax and thorax bluish white, possibly blue in life. The black lateral line on thorax relatively longer.

*Venation*: The pterostigma is more oblique, its inner and outer margins more definitely parallel than is the case in *C. flavostriata*. (Text-fig. 3.)

*Prothorax*: The posterior lobe carries a very fine projecting point at either lateral angle, not present in *C. flavostriata*.

Text-figure 3.



Wings of *Celliccia campioni* Laidlaw. Type.

Text-figure 4.



*Celliccia campioni*, ♂.

Anal appendages, seen from above.

*Anal appendages* (see text-fig. 4): Upper pair a trifle longer than lower, stout and a little incurved; hooked sharply downwards at the extremity; each carries at its middle an inwardly directed spur. Lower pair stouter and relatively much shorter than in *C. flavostriata*; hooked in towards each other distally.

Type ♂ in the British Museum.

These two small species, characterized by their open reticulation and antehumeral stripe, would appear to form an independent section of the genus.

*CÆLICCIA MACROSTIGMA*, sp. n. (Text-figs. 5, 6.)

1 ♂. Baram, Borneo, 20. x. 10 (1 ♀, Baram, 19. x. 10).

Length of abdomen, ♂ 35 mm., of hind wing 21 mm.

    "    "    "    (♀ 33 mm.,    "    "    "    22 mm.)

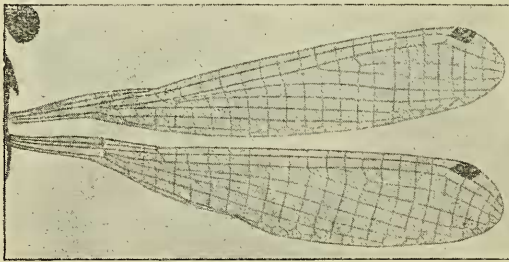
Postnodals  $\frac{15}{14} \mid \frac{15}{15}$  (♀  $\frac{14}{13} \mid \frac{14}{13}$ )

$M_3$  rises at subnodus, Rs a little distal. Three cells between quadrilateral and subnodus. Costal margin of quadrilateral three-fourths the length of anal margin in the fore wing, four-fifths in the hind wing.

*Pterostigma* brown, with fine pale margin, rather large, distinctly broader than the cells of the postnodal costal area. In the front wing it lies over a single long and narrow cell, in the hind wing it covers one cell and a half. (Text-fig. 5.)

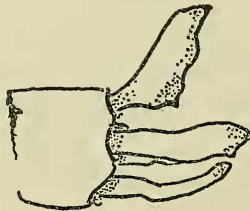
*Head*: Upper lip and anteclypeus black, genæ and lateral parts of postclypeus yellow, the latter black in the centre. Frons and vertex black, base of antennæ and a minute spot on either side of the posterior ocelli yellow. Occiput black, with yellow postocular mark.

Text-figure 5.



Wings of *Cœliccia macrostigma* Laidlaw, ♂. Type.

Text-figure 6.



*Cœliccia macrostigma*, ♂.

Anal appendages.

*Prothorax*: Anterior and posterior lobes black; middle lobe, ventral and lateral surfaces whitish (probably blue in life).

*Thorax*: Dorsum black, with broad (blue?) antehumeral bands. These are indented at the middle by a black mark projecting from the inner side. Laterally the thorax is bluish white, ventrally yellowish white; a fine black line runs along the second lateral suture.

*Legs* yellowish white, the joints, spines, and a line on the femora black.

*Abdomen*: Segment 1 yellowish white with dorsal brown spot; segments 2-7 brown, becoming darker posteriorly, with narrow black apical rings, 2 has a small pair of basal lateral blue(?) spots; segment 8 is black above, yellowish white below, 9 and 10 yellowish white. During life the light colouring on these segments is probably blue; 9 and 10 have fine black basal rings.

*Anal appendages* yellowish brown (? blue) tipped with black. Upper pair a trifle longer than lower pair, each with a large triangular projection inwards and downwards, scarcely visible in profile. Lower pair cylindrical, slightly incurved, and with a distinct elbow at the middle. (Text-fig. 6.)

The presumed female of this interesting species has most unfortunately been completely destroyed whilst in my possession. I have, however, in my possession an account of the specimen which I append here.

*Colouring* in general very similar to that of the male. It differs as follows:—

1. Antehumeral band of thorax completely divided by the black projecting mark into a broader lower part, which is rounded below and pointed above, and a narrower upper part, which is linear.
2. *Abdomen*: Segment 1 entirely yellowish brown above; 8 pale above (probably blue during life); 9 black, with a pair of pale marks above on either side of the middle line; 10 black.

The structure of the *prothorax* is very remarkable. A curious crescentic projection stands out on either side of the middle lobe attached to the prothorax by its convex border. When looked at obliquely from above, each of these projections shows like the moon at the end of the first quarter, but when viewed directly from above each shows as a single outstanding spur.

In addition the black posterior margin of the prothorax carries a fine black spur mid-dorsally. This is nearly .5 mm. in length, and projects forwards and upwards at an angle of about 45° to the long axis of the body. On either side of this projection lies a small lappet, also black, directed backwards.

I do not know of any structure in the Legion *Platycnemis* that can be compared to the crescentic structure on the prothorax, except in the females noted below.

This female was taken in the same locality as the male, and the two specimens were captured on two consecutive days. They agree in size and wing-characters, and closely in colouring, though in this respect they are by no means identical. The evidence that they belong to the same species is not conclusive, though enough to justify the assumption that they may do so.

- Type ♂ in the British Museum.

*CÆLICCIA NIGROHAMATA*, sp. n. (Text-figs. 7, 8.)

6 ♂♂. Mt. Merinjak, Borneo, 21-28. v. 14.

Length of abdomen 38 mm., of hind wing 24 mm.

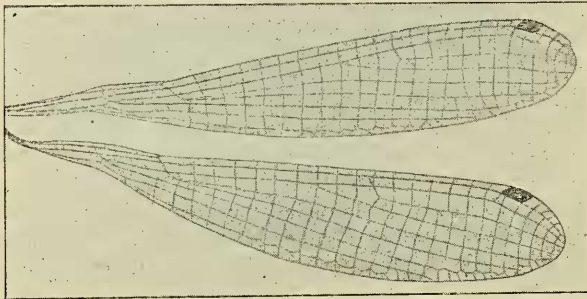
$M_3$  rises from subnodus,  $R_s$  a little distal. Three cells between quadrilateral and subnodus. Costal margin of quadrilateral about two-thirds the length of anal margin in fore wing; four-fifths in hind wing. Postnodals 17-18.

*Pterostigma* black, covering  $1\frac{1}{2}$ -2 cells. (Text-fig. 7.)

*Head*: Upper surfaces black, except for a pair of yellow marks on the genæ, and a pair of minute yellow spots on the vertex on either side of the hinder ocelli.

*Prothorax* black, with lateral and ventral parts yellow.

Text-figure 7.



Wings of *Cæliccia nigrohamata* Laidlaw, ♂. Type.

*Thorax*: Dorsum bronze-black; on either side of the mid-dorsal carina are two silver-blue spots, the lower large and elliptical, the upper small and linear. The black colour extends to the level of the first lateral suture, beyond this as far as the second lateral suture the side of the thorax is of a dull purple-blue colour. Below this the thorax is yellowish white, delimited by a black line along the second lateral suture.

*Legs* yellowish brown; the articulations and spines black, as are a line on the posterior surface of the femora and on the anterior surface of the tibiæ.

*Abdomen*: Segments 1-7 black, 1 with yellow on the sides; segment 8 is black dorsally and blue below; segments 9 and 10 are blue.

*Anal appendages* black; the upper pair shorter than the lower pair, obliquely truncate, with two internal ventral teeth on each. Lower pair slender, incurved, pincer-like (see text-fig. 8).

Type ♂ in the British Museum.

## CÆLICCIA sp. (Text-fig. 9.)

3 ♀ ♀. Kuching, Sarawak.

These specimens belong to a species probably closely allied both to *C. macrostigma* and to *C. nigrohamata*. They may even belong to the latter species, but as there is no definite evidence on the subject I note them here separately.

Length of abdomen 22 mm., of hind wing 34 mm.

$M_3$  rises at or immediately before subnodus, Rs distal; costal margin of quadrilateral two-thirds length of anal margin in the fore wing, four-fifths in the hind wing. Three cells between quadrilateral and subnodus.

*Head* black, upper lip with paired yellow spot at its base; frons with yellow line from eye to eye. Yellow marks between ocelli, antennæ, and eyes, small linear postocular mark of the same colour.

*Prothorax*: Anterior and posterior lobes black, middle lobe yellow, with median longitudinal black stripe. On either side of

Text-figure 8.

Text-fig. 8.—*Cæliccia nigrohamata*, ♂. Anal appendage.

Text-figure 9.

Text-fig. 9.—*Cæliccia* sp., ♀. Prothorax, seen from above.

the lateral lobe is developed a small projecting spur, similar to that found in the presumed female of *C. macrostigma*, but not so largely developed (see text-fig. 9). Posterior margin with fine median spine about 25 mm. long.

*Thorax* black above, with large concentric antehumeral bands, concave inwards, blue in colour. Sides and under surfaces yellow; a fine black band on the second lateral suture, incomplete below.

*Legs* yellow; spines and articulations, and a band on the posterior surface of femora, black.

*Abdomen* brownish black above; segment 1 yellow; segments 9 and 10 black. Ventral side brownish yellow. Pale, small antero-lateral lunules on segments 3 and 4.

## CÆLICCIA sp.

1 ♂. Platang Rd.

There remains to be noted this specimen, which is unfortunately

incomplete, being without the head. It is evidently very closely allied to *C. nigrohamata*, but differs in the following respects. Segment 8 of the abdomen has its terminal quarter ringed with blue, the blue mid-dorsally has its margin indented with black. The upper anal appendages are brownish black, more abruptly truncate than is the case in *C. nigrohamata*, and distinctly though very little longer than the lower pair. The lower pair are relatively stouter than in *C. nigrohamata*, and are brownish yellow (probably blue in life).

The three species, *C. macrostigma*, *nigrohamata*, and that to which this male belongs will probably constitute another distinct section of the genus *Cœliccia*, characterized by small size, rather dense reticulation of wings, as opposed to the open venation of *C. flavostriata*; by the shape of the upper anal appendages of the male; and probably by the prothoracic structure of the female.

To this group I believe it will be found that the species called *Trichoenemis octogesima albicauda* by Förster (which I suggest should be named *C. albicauda* (Först.)), also belongs.

CÆLICCIA MEMBRANIPES (Ramb.), race NEMORICOLA Laidlaw.

*C. nemoricola* Laidlaw, Journ. R. Asiat. Soc. Str. Br. no. 63, p. 95 (1912); id. Proc. Zool. Soc. London, 1915, p. 37.

I have re-examined the examples of this form from Mt. Kina Balu, and have come to the conclusion that they may fairly be taken as representing a local race of the widely-spread *C. membranipes* (Ramb.). The character most readily employed for separating males of *nemoricola* from the typical *membranipes* is afforded by the colour of the upper anal appendages, which are blue in *membranipes*, black in *nemoricola*.

The Kina Balu specimens show marked variability in size and in venation.

Measurements of 5 males taken at random from amongst the 15 male specimens that I have received from Mr. Moulton are as follows:—

Length of abdomen 47 mm., 43 mm., 41 mm., 45 mm., 45 mm.

„ hind wing 30 mm., 28 mm., 26 mm., 30 mm., 30 mm.

The number of postnodal costal nerves ranges from 16 to 21.

The point of origin of  $M_3$  and  $Rs$  varies greatly, as shown in the following table taken from the same males.

$$a = \begin{cases} M_3 \text{ rises at subnodus.} \\ Rs \text{ distal.} \end{cases}$$

$$b = \begin{cases} M_3 \text{ rises proximal to subnodus.} \\ Rs \text{ distal.} \end{cases}$$

$$1. \begin{array}{c|c} a & a \\ \hline a & b \end{array} \quad 2. \begin{array}{c|c} b & b \\ \hline b & b \end{array} \quad 3. \begin{array}{c|c} a & a \\ \hline a & a \end{array} \quad 4. \begin{array}{c|c} b & a \\ \hline a & a \end{array} \quad 5. \begin{array}{c|c} a & a \\ \hline b & b \end{array}$$



## CÆLICCIA OCTOGESIMA (Selys).

*C. octogesima* Kirby, Cat. Odonata, p. 128 (1890).

1 ♀. Matang Rd., 3. i. 10.

This specimen, unfortunately much damaged, agrees well with the description of the type female in the Synopsis.

It differs from other females of the genus I have seen in the greater length of the spine developed on the posterior margin of the prothorax, which projects forward at an angle of about  $45^\circ$  to the main axis of the body and is approximately 1 mm. in length.

I have not been able to identify any of the species I have seen with *C. borneensis* Selys, and as the Bornean species are evidently numerous, and often very similar in appearance, it will be difficult to redetermine Selys' species.

## Legion AGRION.

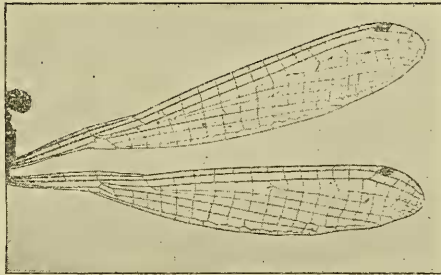
STENAGRION DUBIUM (Laidlaw). (Text-fig. 10.)

*Pseudagrion? dubium* Laidlaw, Journ. R. Asiat. Soc. Str. Br. no. 63, 1912, p. 97, pl. fig. 5.

*Stenagrion dubium* Laidlaw, Proc. Zool. Soc. London, 1915, p. 39.

I take the opportunity of figuring here the venation of the type male of this interesting species (text-fig. 10). It shows a development which parallels with remarkable exactitude that of *Cæliccia*. I am indebted for the photograph of the wings of this species, and of all the new species of *Cæliccia* described in this note, to Messrs. H. and F. E. Champion, to whom I desire to tender my best thanks.

Text-figure 10.



Wings of *Stenagrion dubium* Laidlaw. Type ♂.

Mt. Batu Lawi, Borneo, 27. v. 11.

## TEINOBASIS SUPERBA (Selys).

*Teinobasis superba* Kirby, Cat. Odonata, p. 157 (1890); Ris, Nova Guinea, xiii. Zool. pp. 100, 101, 122 (1915).

1 ♂. Lio Matu.

The specimen belongs, I think, to the typical race of this species.

## ANISOPTERA.

ÆSCHNIDÆ.

GOMPHINÆ.

HETEROGOMPHUS SUMATRANUS Krüger.

*Heterogomphus sumatranus* Krüger, Stett. Entom. Zeit. 1898, p. 294.

5 ♂♂. Retub, 15-16. v. 14.

Mr. J. C. Moulton tells me that this species has blue eyes. It is otherwise remarkable for the rich chestnut-brown colouring of the thorax and abdomen. The latter has the apices of segments 2-9 ringed with black.

The species is quite distinct from *H. icterops* Martin.

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[NOTE.—Owing to the great difficulty of setting the wings of these very fragile insects, some distortion of the wing-base has occurred in the specimens photographed. This is especially the case with the types of *C. macrostigma* and *C. nigrohamata*, consequently the figures of the wings of these species (text-figs. 5 and 7) do not exhibit clearly the course of the “anal bridge” vein, which is, however, that normally found in the genus.]